volume, however, as this, we have the material out of which the chemist of the future will elaborate his general theory of chemical action; and not only this, but we have a storehouse from which the student of our science may draw rich supplies of knowledge, and to which he may always refer, well assured that he will not be sent away empty.

The arrangement of the new *Handwörterbuch* is very similar to our own "Watts' Dictionary." Amid the variety and excellence of the articles, it is difficult to choose any for special mention.

The articles on Equivalents and Atoms are especially to be commended, the former by Prof. Kekulé, the latter by Prof. Fittig. In the former article the author defines the correct and true meaning of the word "equivalent"; he shows how vague oftentimes are the grounds upon which we pronounce that such a substance is equivalent to such another, and he clearly points out the great advantages possessed by the modern atomic notation as compared with the old and vague so-called equivalent notation.

In the article on Atoms we have a clear and succinct account of the modern chemical theory, and an interpretation of the way in which the older ideas of equivalency are applied to the newer atomic doctrines.

The articles on Analysis are generally full and satisfactory. It is strange, however, that such an excellent method of qualitative testing as that presented by "Bunsen's Flame Reactions" should be overlooked.

There are excellent monographs on Aniline and Benzol, by Prof. Hofmann and Zincke respectively; while on such subjects as the Respiration of Animals and Plants, and Zoö-chemistry in general, we have articles from the pen of Prof. v. Gorup-Besanez. The woodcuts are admirable; in this respect the German work is far ahead of our English Dictionary. Let us hope that the work will be completed as promised in the prospectus, and that the volume already published will not add another to the already too long list of great German scientific works the opening volumes of which stand waiting for their successors, but seemingly waiting in vain.

M. M. PATTISON MUIR

OUR BOOK SHELF

Die fossilen Bryozoen des österreichisch-ungarischen Miocäns. Von Prof. Dr. A. E. Ritter von Reuss. I. Abtheilung. Pp. 50. 4to. (Wien: 1874.)

Geologischer Bau der Insel Samothrake. Von Rudolf Hoernes. Pp. 12. 4to. (Wien: 1874)

THESE publications are extracted from the Transactions of the Imperial Academy of Sciences. Dr. v. Reuss's paper describes the Salicornaridæ, Cellularidæ, and Membraniporidæ, a number of the species being new; and gives twelve excellent plates of the fossils. According to Herr Hoernes, the island of Samothraki consists of abrupt hill-masses of ancient crystalline rocks, such as granite, clay-slate, hornblende rock, &c., overlaid, especially in the north-west and north, with deposits of Eocene age, and diluvial and recent accumulations. A coloured sketch-map accompanies the paper.

Über die palaeozoischen Gebilde Podoliens und deren Versteinerungen. Von Dr. Alois v. Alth. Erste Abtheilung. Pp. 178. (Wien: 1874.)

Über die triadischen Pelecypoden-Gattungen, "Daonella" und "Halobia." Von Dr. E. Mojsisovics v. Mojsvár. Pp. 38. (Wien: 1874.)

BOTH these publications are issued by the Austro-Hungarian Geological Survey, being extracted from the "Abhandlungen, Band vii." This mode of republishing in a separate form the papers contributed to their Transactions cannot be too strongly commended. Dr. A. v. Alth's paper relates to the region which lies between the rivers Bug and Dnieper. It is illustrated by five lithographic plates of fossils, a number of which are new species of Pteraspis, Scaphaspis, Cyathaspis, Beyrichia, &c. Dr. Mojsisovics' paper is also illustrated by five lithographic plates of a number of new species of the genera Daonella and Halobia, which are described and named by himself.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*]

On the Inventor of Clock Movement applied to Equatorials.—Suum Quique

IN a pamphlet by Col. Laussedat, "On the Horizontal Astronomical Telescope," in which he claims for himself the invention of applying a heliostat to direct the light of any object into a fixed telescope, I find at p. 2 this statement in speaking of the equatorial: "The idea of so endowing a telescope with a moving power which annuls, or, to speak more exactly, compensates the motion of the earth, is due to a French watchmaker of the last century, named Passemont."

I am sure the distinguished writer would not knowingly have done to another the injustice of which in his own case he complains; but in fact this invention belongs to a much earlier date, and to one of far greater fame, the illustrious Robert Hooke, who describes it, with a figure, in his "Animadversions on the Machina Cœlestis of Hevelius" (my copy bears date 1674). It was primarily intended to facilitate the process of measuring directly the distance of two stars, a process which was then much in vogue, but which must have been very troublesome from the difficulty of following them. It consists of a strong polar axis, adjusted at its lower bearing by screws, and carrying at top a cross arm, one end of which bears a counterpoise, and the other a quadrant or sextant with a ball-and-socket support, by which its plane can be made to coincide with that passing through two stars. But Hooke expressly stated that a telescope may be similarly attached there. The polar axis carries an octant whose limb is ratched, and driven by a screw connected with a clock. The clock is regulated by a conical pendulum; and he describes the mode of altering its rate for the sun, moon, and planets. Of the date or details of M. Passemont's re-invention there is no trace in Lalande. But, as I find in Rees' Cyclopædia (art. "Passemont") that he was born in 1702, and that his first publication appeared in 1738, it is by at least half a century later than Hooke's.

It also deserves notice that Col. Laussedat's invention is described by Hooke in his treatise on Helioscopes two years later (1676). His words are: "I explained at the same time to the Royal Society several other ways of facilitating the use of very long glasses for other objects in the heavens (he had been speaking of the sun) by the help of one reflecting plate only, and that was by a tube fixed either perpendicularly, horizontally, or obliquely; for it mattered not, whether as to the seeing the object in any part of the heaven, and the object could be as easily found as by the common telescope of the same length. But of these elsewhere."

I have not, however, been able to find any further notice of it in his works.

This invention leads me to a suggestion which may be interesting to astronomers. The Royal Society possesses two Hüyghenian object-glasses, one of 120 feet focal length, the other of 200. Some years ago a question was raised by M. O. Struve as to the defining power of the first-named of these, in reference to a discussion on the rings of Saturn, and the Society appointed a committee to examine. It was tried at the Kew Observatory, and defined a watch-dial as well as a good 3·75-inch achromatic. This was considered sufficient without incurring the great expense of such a scaffolding or building as would have been required to use it for celestial observations. These, however, can be easily managed by Col. Laussedat's arrangement. If successful, these

object-glasses would probably give matchless solar photograms. The 120 feet has 6 inches aperture, and would give a solar picture 13·4 inches diameter. R.

The Potato Disease

I AM afraid I cannot regard the letter of your anonymous correspondent "Inquirer" as written in altogether good faith. He first misrepresents what I stated in my letter of Nov. 20, which he professes to quote, and then proceeds to ask me a question which, if he had even glanced at my letter, he would have seen was already answered.

If I beg your indulgence for some further remarks suggested by "Inquirer's" letter, I hope that they will be the last it will be necessary to make.

The number of NATURE for Nov. 19 gave what purported to be an account of the "Report of the Potato Disease Committee of the Royal Agricultural Society." It contained the following passage:—"Prof. de Bary has worked out the scientific questions that occur as to the origin of the disease. It is owing to a fungus (*Peronospora infestans*), which attacks the leaves first, and after absorbing the nutriment of them, utilises the petiole, and thus reaches the tubes" (*sic*). It appeared to me, as it did to others, that the only meaning which could be attributed to this was that we owed to Prof. de Bary all the knowledge we at present possess with regard to the disease.

I therefore thought it fair to point out in the following number "that all this and a good deal more was ascertained by the Rev. M. J. Berkeley in this country, and by Montagne in France, and published by the former in a paper contributed to the first volume of the Journal of the Horticultural Society in 1846." It is almost incredible that anyone with my letter before him should say that I had asserted "the *discovery* by the Rev. M. J. Berkeley of the fact that the potato disease was due to the attacks of a parasitic fungus," and should proceed to ask me for "a *more exact reference* to the records."

The potato disease appeared on the Continent a few years before it worked such ravages in the British Isles. The mould had been detected upon the foliage in France and Belgium, but opinion was divided as to the part it really played. And we have Mr. Berkeley's authority for asserting that even Montagne, to whom "Inquirer" attributes the discovery that the potato disease was due to the attacks of a parasitic fungus, did *not* support the "fungal theory."

In this country Mr. Berkeley maintained it almost single-handed against men of such weight as Lindley and Playfair. His paper, which appeared in the Horticultural Society's Journal in November 1845 (the whole volume is dated 1846), really, however, settled the matter.

It is perfectly easy to trace what Mr. Berkeley did by referring to the horticultural papers of the time. Thus, he wrote to the *Gardener's Chronicle*, August 30, 1845 (p. 593): "The malady by which potatoes are so generally affected this year, both in this country and on the Continent, does not appear to prevail in this neighbourhood. . . . I have this morning received from Dr. Montagne, of Paris, some leaves affected with the mildew. . . . The parasite of the potato does not appear to have been observed before by systematists." On Sept. 6 (p. 608): "You will be interested to learn that the mould upon the potatoes which you sent me is identical with that upon the leaves, and the same with what I have received from Paris. It appears, then, that *the decay of the tubers is produced by the same cause which affects the leaves*, viz., by the growth of a mould whose development has been promoted by excessive wet." On Sept. 20 (p. 640): "In every case I find the *Botrytis infestans* [now called *Peronospora infestans*] preceding the work of destruction."

All this is given with very full details by Mr. Berkeley in his later paper. What I wish, however, particularly to point out is that the admirable observation (contained in the words I have italicised) of the identity of the fungus which attacks the foliage with that which destroys the potatoes was made absolutely independently by Mr. Berkeley. Morren appears to have made it about the same time. It is a sufficient proof of the estimation in which his investigations were held at the time, that Montagne relinquished the intention of writing upon the subject, and transmitted his materials to Mr. Berkeley, by whom the use of them is duly acknowledged. W. T. THISELTON DYER

Mr. Cuttell and Section Cutting

IN your number of NATURE just issued you have given an extract from the annual address of the President of the Royal Society, in which reference is made to my labour of section cutting. It is perfectly true that I have prepared more than a thousand sections of coal plants, but it would be unfair to a very efficient auxiliary not to mention the help he has afforded me in this work. I require many sections of a much larger size than my machinery is capable of cutting, and these have been prepared for me by the skilled hands of Mr. Cuttell, of New Compton Street, London.

In each of two instances, also, I am indebted to the same experienced lapidary for obtaining three sections out of small but precious fragments, not more than from three-sixteenths to a quarter of an inch in thickness. I am anxious to recognise these services, and not to monopolise Mr. Cuttell's share of the credit for the labours to which Dr. Hooker's report refers so kindly.

W. C. WILLIAMSON

Fallowfield, Manchester, Dec. 24

Snakes and Frogs

IN reading the letter of your correspondent, Mr. Mott, on the cry of the frog, it struck me as curious that there should be resemblances which people in countries wide apart should pitch on the same phrase to indicate. Now, there could not be a better way of conveying a sound which frequently greets one's ears in the country in Bengal during the rains, than that which your correspondent makes use of, "the cry of a new-born infant." Few residents in the country here, we take it, who have lived anywhere near jungle, will have failed to hear, and that tolerably frequent, the unspeakably plaintive wail which indicates that the remorseless ophidian has seized his prey, and that deglutition has commenced. If one be tolerably quick he may, as I have frequently done, guide himself to the very spot by the sound of the frog, and the snake will then, in his alarm and anxiety to escape, frequently let the frog go, though he as often slides off with it protruding from his mouth. We have the batrachians in great force here, and of all sizes and noises, from the great swamp frog which, as soon as the lands are drenched in the heavy rainstorms of May, commences its nocturnal bellowing, down to the bronze tree frog with gilt eyebrows that keeps up its metallic tink.

The frog is connected with some of the religious ceremonies of the country; and one may see here, as well as in Assam, the curious custom of "bathing the frogs" in a cage. This is done in time of drought to propitiate the rain god. Grain is sometimes put out on a mat to sun, and to prevent the crows from making away with it, a frog is tied by the leg to a stake; his constant hopping about acts as a deterrent to the crow. Hence the native proverb denoting vicarious and unmerited suffering, "The crow steals the grain, and the string is round the leg of the frog." C. B.

Budderpore, Eastern Bengal

THE ANDERSON SCHOOL OF NATURAL HISTORY

MOST of our readers, no doubt, have heard of the School of Natural History established by the late Prof. Agassiz, in conjunction with some of his American friends, shortly before his lamented decease. The first report of the trustees of this institution, which has lately been received in this country, gives a fuller account of its foundation and subsequent progress than has yet reached us.

The plan of the school was first put forward by its originator in a circular issued in December 1872, from the Museum of Comparative Zoology at Cambridge, U.S.A. It was proposed that courses of instructive lectures in various branches of natural history should be delivered by the sea-side, at Nantucket—an American bathing-place—during the summer months, by Agassiz himself, and by other naturalists belonging either to the same institution, or to other scientific establishments in the United States, who had combined together to assist him. The object of these courses was chiefly for the benefit of teachers proposing to introduce the study of natural history into their schools, and for such students as were preparing to become teachers. Besides the lectures it